

WHAT IS CLAIMED IS:

1. An apparatus for generating a combustible gas flame above a surface of a liquid, the apparatus comprising:

a manifold completely disposed within the liquid and defining a manifold space and at least one aperture; and

a combustible gas source configured to deliver combustible gas to the manifold space, wherein the manifold delivers the combustible gas into the liquid through the at least one aperture, and wherein the combustible gas evolves from the liquid for ignition into the combustible gas flame.

2. The apparatus of claim 1, further comprising an air source, wherein the air source is configured to deliver air to the manifold space.

3. The apparatus of claim 1, further comprising:

a liquid outlet positioned adjacent the manifold, wherein the liquid outlet is defined by an outer surface of the apparatus; and

a pump configured to deliver a supply of liquid to the liquid outlet, wherein the liquid outlet delivers the supply of liquid into the liquid.

4. The apparatus of claim 3, wherein the supply of liquid includes a flame-enhancing substance.

5. The apparatus of claim 3, further comprising an isolation assembly disposed in the liquid to surround the manifold and isolate the supply of liquid from the liquid.

6. The apparatus of claim 1, further comprising an electronic ignition and flame-sensing assembly, wherein the electronic ignition and flame-sensing assembly ignites the combustible gas as it evolves from the liquid and wherein the electronic ignition and flame-sensing assembly senses when the combustible gas flame has extinguished.

7. An apparatus for generating a combustible gas flame above a surface of a liquid, the apparatus comprising:

a manifold at least partially disposed within the liquid and defining a manifold space and at least one aperture;

a gas tube defining a gas passage coupled to a combustible gas source, the gas passage being configured to deliver a combustible gas from the combustible gas source to the manifold space, wherein the manifold delivers the combustible gas through the at least one aperture for ignition into the combustible gas flame; and

at least one liquid tube defining a liquid passage positioned below the manifold, wherein the liquid passage surrounds the gas passage and is coupled to a pump configured to deliver a supply of liquid from the pump to a liquid outlet, the liquid tube at least partially defining the liquid outlet.

8. The apparatus of claim 7, wherein the apparatus includes a plurality of liquid tubes surrounding the gas passage and defining a plurality of liquid passages.

9. The apparatus of claim 7, wherein the manifold is completely disposed in the liquid, and wherein the combustible gas is discharged into the liquid and the combustible gas evolves from the liquid.

10. The apparatus of claim 7, further comprising an isolation assembly disposed in the liquid to surround the manifold and wherein the isolation assembly isolates the supply of liquid from the liquid.

11. The apparatus of claim 7, further comprising an electronic ignition and flame-sensing assembly, wherein the electronic ignition and flame-sensing assembly ignites the combustible gas as it delivered from the manifold and wherein the electronic ignition and flame-sensing assembly senses when the combustible gas flame has extinguished.

12. The apparatus of claim 7, further comprising an air source coupled to the gas passage for supplying air to mix with the combustible gas.

13. An apparatus for generating a combustible gas flame above a surface of a liquid, the apparatus comprising:

a manifold at least partially disposed within the liquid and defining a manifold space;

a combustible gas source, wherein the combustible gas source is configured to deliver combustible gas to the manifold space through a tube defining a passage; and

a pump, wherein the pump is configured to deliver a supply of liquid to the manifold through the passage,

wherein the combustible gas is introduced into the supply of liquid and the combustible gas and the supply of liquid are delivered to the manifold space through the passage and are discharged from the manifold for ignition into the combustible gas flame.

14. The apparatus of claim 13, wherein the pump includes a rotary assembly to swirl the supply of liquid and thereby create a middle portion substantially void of the supply of liquid, and wherein the combustible gas is introduced into the middle portion.

15. The apparatus of claim 13, wherein the pump includes a rotary assembly to mix the supply of liquid and the combustible gas to form a mixture.

16. The apparatus of claim 13, wherein the manifold is completely disposed within the liquid, and wherein the combustible gas is discharged into the liquid and the combustible gas evolves from the liquid.

17. The apparatus of claim 13, further comprising an isolation assembly disposed in the liquid to surround the manifold and isolate the supply of liquid from the liquid.

18. The apparatus of claim 13, further comprising an electronic ignition and flame-sensing assembly, wherein the electronic ignition and flame-sensing assembly ignites the combustible gas as it evolves from the supply of liquid and wherein the electronic ignition and flame-sensing assembly senses when the combustible gas flame has extinguished.

19. An apparatus for generating a combustible gas flame above a surface of a liquid, the apparatus comprising:

a float configured to float on the surface of the liquid;

a manifold disposed on the float and defining a manifold space and at least one aperture; and

a combustible gas source disposed on the float and coupled to the manifold, wherein the combustible gas source delivers combustible gas to the manifold space, and wherein the combustible gas is delivered from the manifold for ignition into the combustible gas flame.

20. The apparatus of claim 19, further comprising a pump disposed on the float, the pump defining a pump inlet positioned to be in fluid communication with the liquid and the pump defining a pump outlet coupled to the pump inlet through a passage, wherein the pump is configured to deliver liquid from the pump inlet, through the passage, and out the pump outlet.

21. A method for generating a combustible gas flame above a surface of a liquid, the method comprising steps of:

providing a manifold defining a manifold space, wherein the manifold is constructed to be completely disposed within the liquid to discharge combustible gas into the liquid and allow the combustible gas to evolve from the liquid to be ignited above the surface of the liquid; and

providing a gas tube to supply combustible gas to the manifold space.

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22. A method for generating a combustible gas flame above a surface of a liquid, the method comprising steps of:

providing a manifold for discharge of combustible gas;

providing a gas tube to define a gas passage to deliver the combustible gas from a combustible gas source to the manifold, wherein the gas is ignited above the surface of the liquid; and

providing a liquid tube surrounding the gas tube, wherein the liquid tube and gas tube define a liquid passage for the delivery of a supply of liquid to a liquid outlet for discharge.

23. The method of claim 22, further comprising steps of:

positioning the liquid outlet in the space above the liquid; and

allowing the liquid to exit the liquid outlet into the liquid.

24. A method for generating a combustible gas flame above a surface of a liquid, the method comprising steps of:

providing a combustible gas source for providing combustible gas;

providing an apparatus including a manifold defining a manifold space, wherein the apparatus is at least partially disposed within the liquid;

providing a supply of liquid to the apparatus;

swirling the supply of liquid in the apparatus to create a center portion substantially free of the supply of liquid;

introducing the combustible gas into the center portion;

providing the combustible gas and the supply of liquid to the manifold space;

discharging the supply of liquid and the combustible gas from the manifold; and

igniting the combustible gas to create the combustible gas flame.

25. An apparatus for generating a combustible gas flame above a surface of a liquid, the apparatus comprising:

a manifold at least partially disposed within the liquid and defining a manifold space;

means for delivering combustible gas to the manifold space for ignition to create the combustible gas flame; and

means for delivering a supply of liquid for delivery to a liquid outlet defined by the apparatus.

26. The apparatus of claim 25, further comprising means for mixing the combustible gas and the supply of liquid.

27. The apparatus of claim 25, further comprising means for enhancing the combustible gas flame.

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